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**ARIZONA CORPORATION COMMISSION**

June 5, 2006

Mr. Jack Davis  
President and CEO  
Arizona Public Service  
400 East Van Buren  
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Mr. James Pignatelli  
CEO and President  
Tucson Electric Power  
1 South Church Avenue  
Mail Stop UE181  
Tucson, AZ 85701

Re: Renewable Energy Standard and Tariff  
Docket No. RE-00000C-05-0030

Dear Sirs:

As you know, the Commission is interested in determining the long-term fiscal impact of its proposed Renewable Energy Standard (RES). Over the years, the Commission has made significant policy decisions to develop more "renewable energy" in the state.

Though our discussions have been lengthy and detailed, they have generally focused on the specific technologies and the general laws and rules requiring additional renewable percentages. Little attention has been given to the per kW/hr cost of the various renewable technologies. In conjunction with Commission Staff, I have developed an estimate of these costs (see the attached "Costs of Renewable Power (by source)" over the last two years.

Less understood and explored are indirect costs, such as firming non-firm renewable sources and integrating renewables, of the proposed RES. I have attached the "Renewable Costs Spreadsheet" for the purpose of identifying and quantifying possible additional costs. To know the real effect of any portfolio standard change, these indirect costs need to be quantified for the record.

Additionally, the Commission has never been provided with a comprehensive accounting of the taxpayer funds being used to subsidize renewable power. Both the federal government and State of Arizona provide generous tax incentives. In addition, the Commission is proposing the implementation of a higher RES surcharge to fund utility-based and distributed generation renewable projects.

Please, to the degree possible, provide the following information:

1. Review the "Costs of Renewable Power (by source)" exhibit. How accurate is the attached sheet in estimating the costs of various forms of renewable power?
2. As to the "Renewable Costs Spreadsheet," please provide the Commission with your best analysis: Does the renewable costs spreadsheet accurately depict potential indirect costs? Do you have actual or estimated numerical data for these indirect cost budget items? If so, please share this data with the Commission. (It should be expected that cost factors will vary depending upon the specific generation technology.)
3. Provide the Commission with an estimate based on tax year 2005 of the total governmental subsidies to residential and commercial "renewable" developers. What percent of cost is borne by the developer? What percent by the taxpayer.
4. Provide the Commission with a breakdown of any federal and state subsidies received by your company for the conventional production of electricity using coal, natural gas and nuclear power. What percent of cost is borne by the developer? What percent by the taxpayer.

Without successful integration of renewable power into Arizona's power grid, our efforts may prove counterproductive and hugely expensive. That success depends upon the efforts of you and your fellow electric utilities.

Thank you for your attention. I look forward to your continuing communication with the Commission on this important matter.

Sincerely,



Jeff Hatch-Miller  
Chairman

Enclosures

Cc: Commissioner William A. Mundell  
Commissioner Marc Spitzer  
Commissioner Mike Gleason  
Commissioner Kristin K. Mayes  
Brian McNeil  
Christopher Kempley  
Lyn Farmer  
Ernest Johnson  
Heather Murphy  
Parties of Record  
Docket Control

## Costs of Renewable Technologies

<u>Technology</u>	<u>Installed Cost (\$/Watt)</u>	<u>Cost (¢ /kWh)</u>
Photovoltaics (tracking)	\$6.00	20-36 ¢
Photovoltaics (concentrating)	\$6.00	20-33 ¢
Photovoltaics (fixed)	\$7.00	20-36 ¢
Solar Trough	\$5.00	15-28 ¢
Biomass	\$1.80-2.00	7.5-10 ¢
Landfill Gas	\$1.80	5-7 ¢
Geothermal	\$2.00	7-8 ¢
Wind	\$1.40-1.80	6-8.5 ¢
Coal.....	\$1.70	4-6 ¢
Nuclear	\$2.00	3-5 ¢

Note: Costs vary greatly depending on resource availability, size and scope of systems, and availability of incentives/tax credits.

Source: Arizona Corporation Commission

**Spreadsheet of the Costs of Renewable Generation**  
**Jeff Hatch-Miller (1-11-06)**

<b>Operating revenues (total)</b>				
	Sales			
	Tax incentives/credits			
	Land value appreciation			
<b>Direct Operating expenses</b>				
	Renewable Generation specific			
		Capital and financing costs		
		Depreciation		
		Taxes		
		Operations		
		Maintenance		
		Fuel		
		Coolants		
		Load Dispatching		
		Integration (non utility owned)		
		Distribution		
<b>Indirect Operating Expenses</b>				
	Renewable/Utility Interface			
		Metering and protective relay equipment		
		Maintenance of renewable system interface		
		Backup/spinning reserves - daily, seasonal		
		Load Dispatching		
		Integration (non utility owned)		
		Transmission		
		Distribution		
	Utility system specific			
		Maintenance of base system		
		Peak capacity reserves		
		Power Production Expenses		
		Transmission Expenses		
		Distribution Expenses		
		Customer Accounts Expenses		
		Customer Service and Information Expenses		
		Sales Expenses		
		Administration and General Expenses		